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Multivariate community-based analysis of vulnerability and resilience of flooding 2005 in the province of Tyrol / Austria

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Assessing and measuring vulnerability from an integrated point of view implies measurements of resilience, because these phenomena have to be understood as ambivalent and complement entities. This investigation takes place for the catastrophic floods in summer 2005 in the province of Tyrol, Austria, which caused an estimated EUR 500 Mio. direct losses on private and public assets. The key issue is to glance at the driving forces of vulnerability as a multifaceted phenomenon. It is argued that vulnerability is dependant on social, structural, economic, process orientated variables and resilience as an indicator for buffering capabilities in the field of natural hazards. The findings are essential for an integrated and interdisciplinary risk management, but also for the ex-post management of catastrophes due to natural hazards in alpine regions. A multivariate data analysis will allow to sight for the essential components of vulnerability. Community-scaled statistical data is applied as well as survey-data and indicators of the flooding in 2005, e.g. maximum discharges and furthermore monetary losses from the same event to associate social and natural sciences. The survey comprises data on resilience infrastructure, especially from local fire departments, as a quantifiable key element of buffering capabilities against natural hazard processes. Finally the method of investigation and interpretation of results is discussed as a basis for improvement of the understanding and assessment of vulnerability and resilience at the scale of municipalities.